Patent claims

1. Method for the production of a coated structure (1), which is suitable for carrying out heterogeneous catalyses, said structure comprising layers (2, 3) of film-like sheet metal lamina (10) which are arranged one above the other as well as flow channels which are integrated in or between the layers, with it being possible for some or all of the sheet metal lamina to be reshaped so that the flow channels are formed as a result of a shaping of the sheet metal lamina,
characterised in that catalytically active coatings (11) which are porous or have a high roughness are applied in a container (101) to the individual sheet metal lamina (10) — preferably prior to a reshaping — with a plasma spray method, namely an LPPS method, using a plasma flame (212) which acts defocusingly on an injected powder jet, with a value for the pressure in the container being set between about 15 and 1500 Pa, preferably between 100 and 500 Pa; in that after the coating and where appropriate a reshaping the sheet metal lamina are fitted together to a stack or a winding body; and in that furthermore tissues or other surface-like structures which are correspondingly to be coated are also used instead of sheet metal lamina.

2. Method in accordance with claim 1, characterised in that the coating (11) is built up of powder-like coating material (P) through the application of a large number of individual coats, with powder particles (12) of the coating material having an average diameter

which is preferably less than about 5 10^3 nm, each particle of which the diameter is not substantially smaller that the average diameter being not or only partly melted in the plasma flame, a coat of dispersely distributed particles being applied per individual coating and the average thickness of the individual coat amounting to about 100 to 500 nm.

3. Method in accordance with claim 1 or claim 2, characterised in that the sheet metal lamina (10) are for example treated prior to the coating with sand jets so that a surface results which allows a good adhesion of the coating (11) to arise and — in relation to the catalytically active surfaces of the coating — a large specific surface results.

4. Method in accordance with any one of the claims 1 to 3, characterised in that for the coating (11) a ceramic material, for example Al_2O_3, or another material or material mixture is used in order to produce a carrier for a catalytically active substance, such as for example platinum, palladium or other metals, with a single coat or a plurality of individual coats of the carrier material being applied alternatingly with a single coat of the catalytically active substance or a simultaneous application of carrier material and catalytically active substance being carried out during the coating.

5. Method in accordance with any one of the claims 1 to 4, characterised in that materials are used for the coating (11) for

which a heterogeneous layer results in such a manner that the coating is built up of a relatively small number of large, uniformly distributed particles (12') and a relatively large number of small particles, with the large particles, which produce a high roughness, preferably having a porous fine structure.

6. Method in accordance with any one of the claims 1 to 4, characterised in that a catalytically active substance, for example Cu, is used for the coating material.

7. Catalyst body in the form of a structure comprising sheet metal lamina or other surface-like formations, with the surface-like formations having a coating which is produced in accordance with any one of the claims 1 to 6.

8. Catalyst body in accordance with claim 7, characterised in that planar sheet metal lamina (10) are arranged at spacings which form flow channels and/or at least every other one of the layers which are arranged one on the other consists of a reshaped sheet metal lamina which forms flow channels.

9. Catalyst body in accordance with claim 8, characterised in that the shaped sheet metal lamina (10) are corrugated or have a zigzag-shaped cross-section; and in that the sheet metal lamina can furthermore have a fine structuring, for example a grooving or apertures, for example circular holes, which are formed through removal of material; or in that all or individual sheet metal lamina

(10, 4) have apertures as a result of regularly arranged slits and a reshaping so that these sheet metal lamina are for example formed in the manner of a stretch grid.

10. Catalyst body in accordance with claim 9, characterised in that all sheet metal lamina (10) are shaped and the flow channels of adjacent layers are mutually open and cross one another.